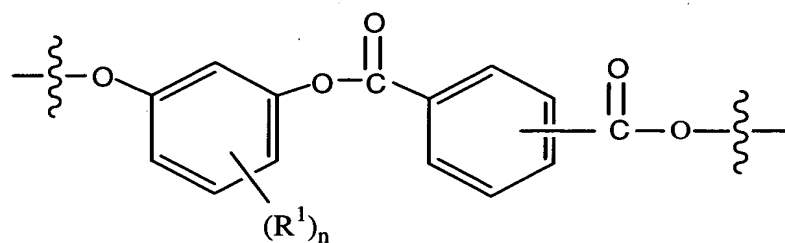


## WHAT IS CLAIMED IS:

[c01] A coating composition comprising components A, B and optionally C

(i) component A comprising at least one polyarylate comprising structural units having formula I



Formula (I)

wherein  $R^1$  is independently at each occurrence a  $C_1$ - $C_{12}$  alkyl radical and  $n$  is 0-3, said polyarylate further comprising phenolic hydroxy groups;

(ii) component B comprising at least one “organic species” comprising one or more functional groups, said functional groups being chemically reactive with the phenolic hydroxy groups of the polyarylate of component A; and optionally

(iii) component C one or more catalysts which promote chemical reaction between the polyarylate of component A and the “organic species” of component B.

[c02] The coating composition according to claim 1 wherein the functional groups of component B are selected from the group consisting of isocyanates, anhydrides, epoxies, acid chlorides, carboxylic acids, activated carboxylic acid esters, sulfonyl chlorides, aminals, and amins.

[c03] The coating composition of claim 1 wherein component B comprises at least one melamine-type resin, urea formaldehyde resin, or a combination thereof.

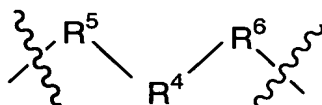
[c04] The coating composition according to claim 1 further comprising a co-resin.

[c05] The coating composition according to claim 1 wherein the concentration of component A is at about 1 to about 99 percent by weight of the total weight of the coating composition.

[c06] The coating composition according to claim 1 wherein the concentration of component B is at about 99 to about 1 percent by weight of the total weight of the coating composition.

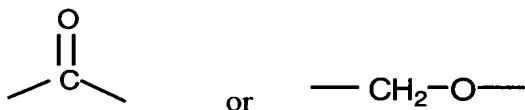
[c07] The coating composition according to claim 1 wherein the concentration of component C is at about 0.00001 to about 10 percent by weight of the total weight of the coating composition.

[c08] The coating composition according to claim 1 wherein component A further comprises structural units having formula VIII:

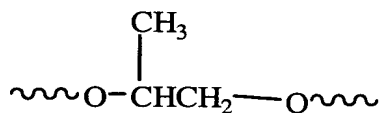


Formula (VIII)

wherein  $R^4$  is a  $C_2$ - $C_{100}$  aliphatic radical, or a  $C_4$ - $C_{20}$  cycloaliphatic radical and  $R^5$  and  $R^6$  each independently represent a bond

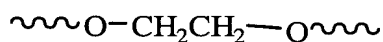


[c09] The coating composition according to claim 8 wherein said  $C_2$ - $C_{100}$  aliphatic radical  $R^4$  comprises structural units having formula IX



Formula (IX)

[c10] The coating composition according to claim 8 wherein said C<sub>2</sub>-C<sub>100</sub> aliphatic radical R<sup>4</sup> comprises structural units having formula X



Formula (X)

[c11] The coating composition according to claim 8 wherein the concentration of the structural unit of formula VIII in component A is in a range between about 0.01 to about 50 percent by weight of the total weight of the coating composition.

[c12] The coating composition according to claim 1 wherein said polyarylate has a number average molecular weight in a range between about 2000 and about 5000 grams per mole.

[c13] The coating composition according to claim 1 wherein said polyarylate has a number average molecular weight in a range between about 500 and about 2500 grams per mole.

[c14] The coating composition according to claim 1 wherein the catalyst is selected from the group consisting of tertiary amines, quaternary ammonium salts, quaternary phosphonium salts, Lewis acids, and mixtures thereof.

[c15] The coating composition according to claim 1 further comprising at least one solvent.

[c16] The coating composition according to claim 15 wherein said solvent is selected from the group consisting of amides, esters, ethers, ketones, alcohols, aromatics, halogenated solvents and mixtures thereof.

[c17] The coating composition according to claim 16 wherein said solvent is selected from the group consisting of dimethylacetamide, tetrahydrofuran, and mixtures thereof.

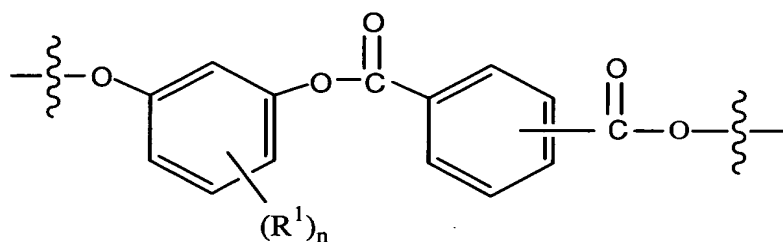
[c18] The coating composition according to claim 1 further comprising water.

[c19] The coating composition according to claim 18, said coating composition being a dispersion in water.

[c20] The coating composition according to claim 1 further comprising at least one additive selected from the group consisting of inorganic pigments, organic pigments, inorganic fillers, and organic fillers.

[c21] A powder coating composition comprising components A, B and optionally C

(i) component A comprising at least one polyarylate comprising structural units having formula I



Formula (I)

wherein  $R^1$  is independently at each occurrence a  $C_1$ - $C_{12}$  alkyl radical and  $n$  is 0-3, said polyarylate further comprising phenolic hydroxy groups;

(ii) component B comprising at least one “organic species” comprising one or more functional groups, said functional groups being chemically reactive with the phenolic hydroxy groups of the oligomeric polyarylate of component A; and optionally

(iii) component C one or more catalysts which promote chemical reaction between the polyarylate of component A and the “organic species” of component B.

[c22] The powder coating composition according to claim 21 wherein the functional groups of component B are selected from the group consisting of isocyanates, anhydrides, epoxies, acid chlorides, carboxylic acids, activated carboxylic acid esters, sulfonyl chlorides, amidals, and amins.

[c23] The powder coating composition of claim 21 wherein component B comprises at least one melanine-type resin, urea formaldehyde resin, or a combination thereof.

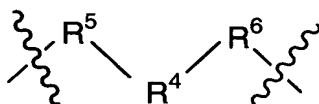
[c24] The powder coating composition according to claim 21 further comprising a co-resin.

[c25] The powder coating composition according to claim 21 wherein the concentration of component A is at about 1 to about 99 percent by weight of the total weight of the powder coating composition.

[c26] The powder coating composition according to claim 21 wherein the concentration of component B is at about 99 to about 1 percent by weight of the total weight of the powder coating composition.

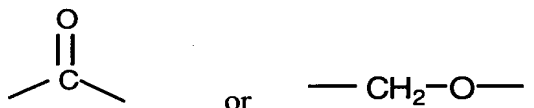
[c27] The powder coating composition according to claim 21 wherein the concentration of component C is at about 0.0001 to about 10 percent by weight of the total weight of the powder coating composition.

[c28] The powder coating composition according to claim 21 wherein component A further comprises structural units having formula VIII:

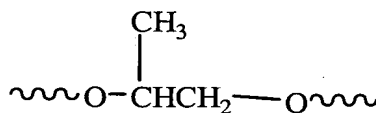


Formula (VIII)

wherein  $R^4$  a  $C_2$ - $C_{100}$  aliphatic radical, or a  $C_4$ - $C_{20}$  cycloaliphatic radical and  $R^5$  and  $R^6$  each independently represent a bond,



[c29] The powder coating composition according to claim 28 wherein said  $C_2$ - $C_{100}$  aliphatic radical  $R^4$  comprises structural units having formula IX



Formula (IX)

[c30] The powder coating composition according to claim 28 wherein said C<sub>2</sub>-C<sub>100</sub> aliphatic radical R<sup>4</sup> comprises structural units having formula X:



Formula (X)

[c31] The powder coating composition according to claim 28 wherein the concentration of the structural unit of formula VIII in component A is in a range between about 0.01 to about 50 percent by weight of the total weight of the powder coating.

[c32] The powder coating composition according to claim 21 wherein said polyarylate is a polyarylate oligomer having a number average molecular weight in a range between about 2000 and about 5000 grams per mole.

[c33] The powder coating composition according to claim 21 wherein said polyarylate is a polyarylate oligomer having a number average molecular weight in a range between about 500 and about 2500 grams per mole.

[c34] The powder coating composition according to claim 32 wherein said oligomeric polyarylate is amorphous.

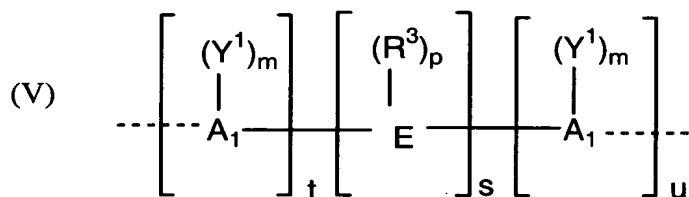
[c35] The powder coating composition according to claim 32 wherein said oligomeric polyarylate is a crystalline solid.

[c36] The powder coating composition according to claim 21 wherein the catalyst is selected from the group consisting of tertiary amines, quaternary ammonium salts, quaternary phosphonium salts, Lewis acids, and mixtures thereof.

[c37] A method of making a polyarylate comprising structural units derived from at least one dihydroxy-substituted aromatic hydrocarbon and at least one aromatic dicarboxylic acid dichloride, said polyarylate further comprising phenolic hydroxy groups, said method comprising the steps of:

- (a) combining at least one dihydroxy-substituted aromatic hydrocarbon moiety, and at least one organic base in an inert organic solvent to form a mixture, said dihydroxy-substituted aromatic hydrocarbon moiety being substantially soluble in said mixture, said dihydroxy-substituted aromatic hydrocarbon being used in an amount corresponding to a molar amount of dihydroxy-substituted aromatic hydrocarbon moieties;
- (b) adding to the mixture formed in step (a) at least one dicarboxylic acid dichloride in a molar amount such that the molar amount of dicarboxylic acid dichloride in the mixture is stoichiometrically deficient relative to the total molar amount of dihydroxy-substituted aromatic hydrocarbon moieties, to form a reaction mixture; and
- (c) agitating the reaction mixture formed in step (b) until essentially all of the dicarboxylic acid dichloride has reacted.

[c38] A method according to claim 37 wherein said dihydroxy-substituted aromatic hydrocarbon moiety comprises structure V



wherein  $A_1$  is independently an aromatic group;  $E$  is alkylene, alkylidene, or cycloaliphatic group; a sulfur-containing linkage; a phosphorus-containing linkage; an ether linkage; a carbonyl group; a tertiary amino linkage; or a silicon-containing linkage;  $R^3$  is independently at each occurrence a monovalent hydrocarbon group;  $Y^1$  is independently at each occurrence a monovalent hydrocarbon group, halogen, and

nitro; "m" represents any integer from and including zero through the number of positions on A1 available for substitution; "p" represents an integer from and including zero through the number of positions on E available for substitution; "t" represents an integer equal to at least one; "s" is either zero or one; and "u" represents any integer including zero.

[c39] A method according to claim 37 wherein said dicarboxylic acid dichloride is selected from the group consisting of monocyclic dicarboxylic acid dichlorides and polycyclic aromatic dicarboxylic acid dichlorides.

[c40] A method according to claim 37 wherein said dicarboxylic acid dichloride is selected from the group consisting of isophthaloyl dichloride, terephthaloyl dichloride, mixtures of isophthaloyl and terephthaloyl dichlorides, diphenyl dicarboxylic acid dichloride, diphenylether dicarboxylic acid dichloride, and naphthalene-2,6-dicarboxylic acid dichloride.

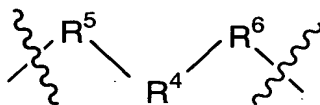
[c41] A method according to claim 37 wherein the organic base is at least one tertiary amine.

[c42] The method according to claim 41 wherein said tertiary amine is selected from the group consisting of triethylamine, dimethylbutylamine, diisopropylethylamine, N-ethylpiperidine, N-methylpiperidine, N-methylmorpholine, N,N-dimethyldecylamine; N,N-dimethyloctadecylamine; 2,2,6,6-tetramethylpiperidine, and diazabicyclo[2.2.2]octane.

[c43] A method according to claim 37 wherein the organic base is present in an amount corresponding to about 0.9 to about 10 equivalents with respect to the dihydroxy-substituted aromatic hydrocarbon moiety.

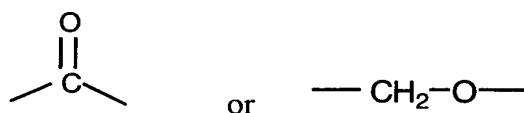
[c44] A method according to claim 37 wherein said at least one dicarboxylic acid dichloride comprises "soft block" structural units having formula VIII:



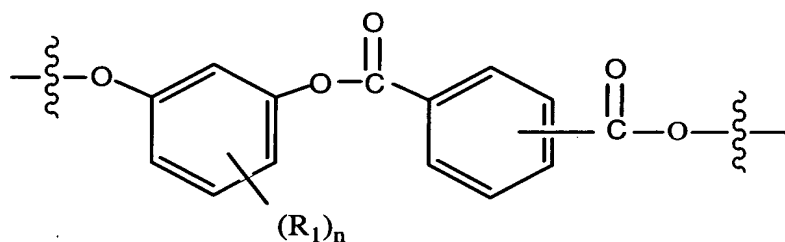


Formula (VIII)

wherein R<sup>4</sup> a C<sub>2</sub>-C<sub>100</sub> aliphatic radical, or a C<sub>4</sub>-C<sub>20</sub> cycloaliphatic radical and R<sup>5</sup> and R<sup>6</sup> each independently represent a bond,



[c45] A method of making an oligomeric polyarylate comprising structural units having formula I



Formula (I)

wherein R<sub>1</sub> is independently at each occurrence a C<sub>1</sub>-C<sub>12</sub> alkyl radical and n is 0-3, said polyarylate further comprising phenolic hydroxy groups, said method comprising the steps of:

- (a) combining at least one resorcinol moiety, and at least one organic base in an inert organic solvent to form a mixture, said resorcinol moiety being substantially soluble in said mixture, said resorcinol being used in an amount corresponding to a molar amount of resorcinol moieties;

- (b) adding to the mixture formed in step (a) at least one dicarboxylic acid dichloride in a molar amount such that the molar amount of dicarboxylic acid dichloride in the mixture is stoichiometrically deficient relative to the total molar amount of resorcinol moieties, to form a reaction mixture; and
- (c) agitating the reaction mixture formed in step (b) until essentially all of the dicarboxylic acid dichloride has reacted.

[c46] The method of making an oligomeric polyarylate according to claim 45 wherein said at least one resorcinol moiety is selected from the group consisting of unsubstituted resorcinol, 2-methyl resorcinol and mixtures thereof.

[c47] The method of making an oligomeric polyarylate according to claim 46 wherein said at least one resorcinol moiety is an unsubstituted resorcinol.

[c48] The method of making an oligomeric polyarylate according to claim 45 wherein the organic base is present in an amount corresponding to about 0.9 to about 10 equivalents with respect to the resorcinol moiety.

[c49] The method of making an oligomeric polyarylate according to claim 48 wherein the organic base comprises at least one tertiary amine.

[c50] The method of making an oligomeric polyarylate according to claim 49 wherein said tertiary amine is selected from the group consisting of triethylamine, dimethylbutylamine, diisopropylethylamine, N-ethylpiperidine, N-methylpiperidine, N-methylmorpholine, N,N-dimethyldecylamine; N,N-dimethyloctadecylamine; 2,2,6,6-tetramethylpiperidine, and diazabicyclo[2.2.2]octane.

[c51] The method of making an oligomeric polyarylate according to claim 45 wherein at least one dicarboxylic acid dichloride is naphthalene-2,6-dicarboxylic acid dichloride.

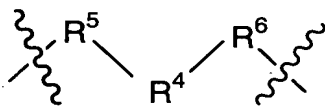
[c52] The method of making an oligomeric polyarylate according to claim 45 wherein the dicarboxylic acid dichloride is a mixture of isophthaloyl dichloride and terephthaloyl dichloride.

[c53] The method of making an oligomeric polyarylate according to claim 52 wherein said mixture has a molar ratio of isophthaloyl dichloride to terephthaloyl dichloride in a range between about 0.2:1 and about 5:1.

[c54] The method of making an oligomeric polyarylate according to claim 53 wherein the molar ratio of isophthaloyl dichloride to terephthaloyl dichloride is in a range between about 0.8:1 and about 2.5:1.

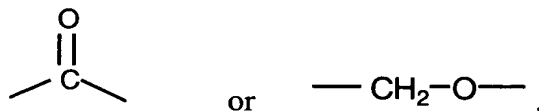
[c55] The method of making an oligomeric polyarylate according to claim 45 wherein the organic solvent is selected from the group consisting of chloroform, chlorobenzene, toluene, methylene chloride, 1,2-dichloroethane, dichlorobenzene, xylene, trimethylbenzene, and mixtures thereof.

[c56] The method of making an oligomeric polyarylate according to claim 45 wherein said at least one dicarboxylic acid dichloride comprises "soft block" structural units having formula VIII:



Formula (VIII)

wherein  $R^4$  a  $C_2$ - $C_{100}$  aliphatic radical, or a  $C_4$ - $C_{20}$  cycloaliphatic radical and  $R^5$  and  $R^6$  each independently represent a bond,



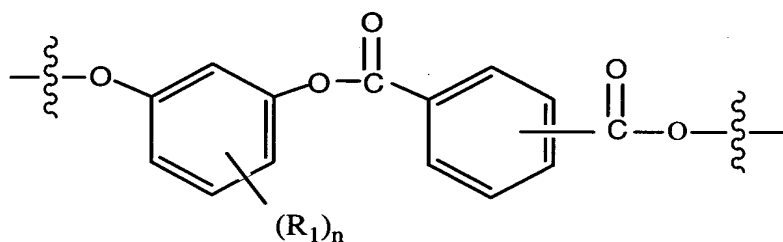
[c57] The method of making an oligomeric polyarylate according to claim 56 wherein said dicarboxylic acid dichloride comprising "soft block" structural units having formula VIII is used in an amount sufficient to provide a concentration of the "soft block" having formula VIII in the product oligomeric polyarylate in a range between about 0.01 and about 50% by weight.

[c58] A coated article comprising:

a substrate layer comprising at least one thermoplastic polymer, thermoset polymer, a cellulosic material, glass or metal, and

at least one cured coating layer thereon, said coating comprising the cure-reaction products of components A, B and C:

(i) component A comprising at least one oligomeric polyarylate, said polyarylate comprising structural units having formula I



Formula (I)

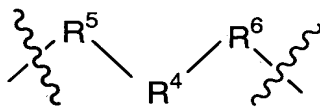
wherein R<sub>1</sub> is independently at each occurrence a C<sub>1</sub>-C<sub>12</sub> alkyl radical and n is 0-3, said oligomeric polyarylate further comprising hydroxy terminal groups;

(ii) component B comprising at least one "organic species" comprising one or more functional groups, said functional groups being chemically reactive with the reactive hydroxy terminal groups of the oligomeric polyarylate of component A; and

(iii) at least one catalyst which promotes the reaction between the oligomeric polyarylate of component A and the "organic species" of component B.

[c59] The coated article according to claim 58 wherein the coating further comprises a co-resin.

[c60] The coated article according to claim 58 wherein component A further comprises structural units having formula VIII:



Formula (VIII)

wherein  $R^4$  a  $C_2$ - $C_{100}$  aliphatic radical, or a  $C_4$ - $C_{20}$  cycloaliphatic radical and  $R^5$  and  $R^6$  each independently represent a bond,

